

## ARCTIC AND SUBARCTIC CONSTRUCTION-GENERAL PROVISIONS

		Paragraph	Page
Chapter	1. GENERAL.....	1-1	1-1
	Purpose.....	1-1	1-1
	Scope .....	1-2	1-1
	Need for special approaches .....	1-3	1-1
	Definitions .....	1-4	1-1
Chapter	2. ARCTIC AND SUBARCTIC REGIONS		
	Introduction .....	2-1	2-1
	Temperature conditions .....	2-2	2-1
	Precipitation, snow cover and snow loads .....	2-3	2-1
	Ice cover.....	2-4	2-1
	Wind and wind chill .....	2-5	2-13
	Visibility and natural illumination .....	2-6	2-16
	Vegetation.....	2-7	2-16
	Special surficial features and markings .....	2-8	2-19
	Seismic activity.....	2-9	2-19
	Graphic summaries .....	2-10	2-19
Chapter	3. ENVIRONMENTAL IMPACT CONSIDERATIONS		
	National environmental policy .....	3-1	3-1
	U.S. Army environmental quality program .....	3-2	3-1
	U.S. Air Force environmental quality program.....	3-3	3-1
	Environmental effects .....	3-4	3-1
Chapter	4. DEEP SEASONAL FROST AND PERMAFROST		
	Distribution .....	4-1	4-1
	Characteristics of permafrost.....	4-2	4-1
Chapter	5. FACILITIES ENGINEERING IN AREAS OF DEEP SEASONAL FROST AND PERMAFROST		
	General .....	5-1	5-1
	Site selection and development.....	5-2	5-2
	Airfield pavements and roads .....	5-3	5-2
	Foundations for structures .....	5-4	5-2
	Utilities.....	5-5	5-3
	Drainage and groundwater.....	5-6	5-4
	Building design practices .....	5-7	5-4
	Construction management and practices .....	5-8	5-5
	Construction operations .....	5-9	5-6
Appendix	A GENERAL AIR INDEX INFORMATION FOR NORTH AMERICA AND EURASIA .....	A-1	
Appendix	B REFERENCES.....	B-1	
Bibliography	.....	Biblio-1	

## LIST OF FIGURES

Figure No		Page
1-1.	Determination of freezing and thawing indexes .....	1-3
1-2.	Mean date of the beginning of the freezing season.....	1-5
1-3.	Mean date of the beginning of the thawing season.....	1-6
2-1.	Northern cold regions: polar limits and zones.....	2-2
2-2.	Location of observation stations in Alaska and Canada .....	2-3
2-3.	Distribution of mean annual air temperature (°F) in North America .....	2-4
2-4.	Distribution of mean annual air temperature (°F) in northern Eurasia .....	2-5
2-5a.	Mean monthly and annual precipitation at selected stations.....	2-6

This manual supersedes TM 5-852-1/AFM 88-19, Chap. 1, dated 25 February 1966.

2-5b.	Location of stations .....	2-7
2-6a.	Snow cover of 1 inch or more in Canada-mean annual date of first snow cover.....	2-8
2-6b.	Snow cover of 1 inch or more in Canada--mean annual date of last snow cover.....	2-9
2-7a.	Stable snow cover, USSR-average dates of formation.....	2-11
2-7b.	Stable snow cover, USSR-average dates of destruction .....	2-11
2-8.	General variation in maximum snow load (lb/ft <sup>2</sup> ) on the ground in Canada.....	2-12
2-9.	Dry-shade atmospheric cooling (wind-chill values).....	2-14
2-10.	Typical January wind-chill values for North America.....	2-15
2-11.	Solar illumination in the Arctic.....	2-16
2-12.	Hours of sunlight .....	2-17
2-13.	Hours from dawn to dark-twilight and sunlight .....	2-18
2-14.	Work feasibility chart, Point Barrow, Alaska. ....	Fold-out located in back of manual
4-1.	Approximate distribution of permafrost in North America .....	4-2
4-2.	Approximate distribution of permafrost in Eurasia .....	4-3
4-3.	Typical sections through ground containing permafrost .....	4-4
5-1.	Permafrost degradation under different surface treatments over a 26-year period at Fairbanks, Alaska .....	5-1
A-1a.	Distribution of mean air freezing indexes ('F-North America .....	A-2
A-1b.	Distribution of mean air freezing indexes (F)--Northern Eurasia.....	A-3
A-2a.	Distribution of mean air thawing indexes (°F -North America .....	A-4
A-2b.	Distribution of mean air thawing indexes (°F-Northern Eurasia .....	A-5
A-3.	Distribution of design air freezing index values for pavements in North America (CF).....	A-6
A-4.	Distribution of design air thawing index values for pavements in North America (°F) .....	A-7